

# SUPPLEMENT.

## The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2302.—VOL. XLIX.

LONDON, SATURDAY, OCTOBER 4, 1879.

PRICE (WITH THE JOURNAL) SIXPENCE.  
PER ANNUM, BY POST, £1 4s.

### WEIGHING MACHINERY

for all Commercial purposes and graduated to any NATIONAL STANDARD by Patent Machines

**HODGSON AND STEAD LIMITED** ESTABLISHED 1852.

EGERTON IRON WORKS REGENT ROAD MANCHESTER  
Show Rooms 15 New Bailey St SALFORD  
Bradford Road DEWSBURY  
Ultoxeter New Rd DERBY  
NEWPORT MON. and CARDIFF  
11 Queen Victoria St LONDON EC

### The Barrow Rock Drill

COMPANY

SUPPLY their CELEBRATED ROCK DRILLS, AIR COMPRESSORS, &c., and all NECESSARY APPLIANCES for working the said Drills.

Their DRILLS have most satisfactorily stood the TEST of LONG and CONTINUOUS WORK in the HARDEST KNOWN ROCK in numerous mines in Great Britain and other countries, clearly proving their DURABILITY and POWER.

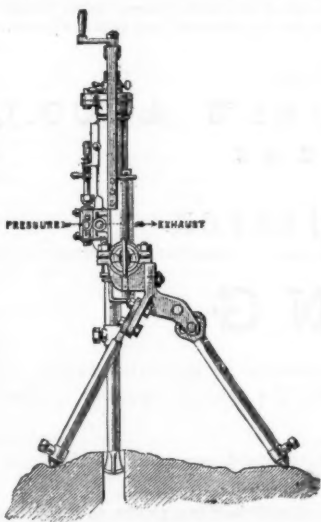
The DRILLS are exceedingly STRONG, LIGHT, SIMPLE, and adapted for ends, stopes, quarries, and the sinking of shafts. They can be worked by any miner.

For PRICES, Particulars and Reports of Successful and Economical Working, apply to—

**LOAM AND SON,  
LISKEARD, CORNWALL.**

### "Cranston" Rock Drill

IS DRIVING LEVELS 200 LINEAR FEET PER MONTH IN HARD QUARTZ ROCK. "EBERHARDT" TUNNEL NOW DRIVEN IN OVER 3842 LINEAR FEET WITH THESE DRILLS AND COMPRESSORS.



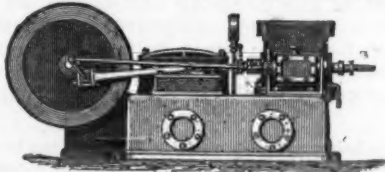
CAN BE SEEN IN DAILY PRACTICAL OPERATION DRILLING 80 FEET OF BLAST HOLES PER DAY IN LIMESTONE ROCK AT ONE-FIFTH THE COST OF HAND LABOUR.

For other particulars and prices, apply to—

**J. G. CRANSTON,  
22, Grey-street, Newcastle-on-Tyne.**

### "ECLIPSE" ROCK-DRILL AND "RELIANCE" AIR-COMPRESSOR

PRIZE MEDAL,  
HIGHEST AWARD.



PARIS EXHIBITION,  
1878.

ARE NOW SUPPLIED TO THE ENGLISH, FOREIGN, AND COLONIAL GOVERNMENTS, And are also in use in a number of the LARGEST MINES, RAILWAYS, QUARRIES, AND HARBOUR WORKS IN GREAT BRITAIN AND ABROAD.

FOR ILLUSTRATED CATALOGUE AND PRICES, apply to—  
**HATHORN & CO., 22, Charing Cross, London, S.W.**

### JOHN FOWLER & CO.,

Steam Plough Works, Leeds; and 71, Cornhill, London, E.C.

PARIS AWARDS.

### THE ONLY GRAND PRIX

In the English Agricultural Section for excellence of workmanship; also a

GOLD MEDAL, SILVER MEDAL, and BRONZE MEDAL.

MANUFACTURERS OF

PATENT YORKSHIRE COMPOUND SEMI-PORTABLE ENGINES, from 6-H.P. to 40-H.P.  
HAULING and WINDING ENGINES, all sizes.  
LOCOMOTIVES of various gauges.

AIR COMPRESSORS, VENTILATORS, &c., &c.  
CLIP PULLEYS, from 3 ft. to 10 ft. diameter.  
STEEL WIRE ROPES.  
MULTITUBULAR BOILERS, from 8-H.P. to 50-H.P.

PATENT PORTABLE RAILWAY from £205 per mile.

Catalogues, Specifications, or References to Parties using our Machinery can be had on application.

PATENT

### "INGERSOLL ROCK DRILL."

MEDAL  
AND  
HIGHEST  
AWARDS.

1872—American Institute.  
1873—Ditto.  
1874—London International.  
1875—Manchester.  
1875—Leeds.  
1875—Cornwall.  
1875—Rio de Janeiro.  
1876—Australia.  
1876—Philadelphia.  
1877—Cornwall.  
1877—Mining Institute.  
1878—Paris.



We claim 40 per cent. greater effective drilling power.

**LE GROS, MAYNE, LEAVER, & CO.,**

60, Queen Victoria Street, London, E.C.,

SOLE AGENTS FOR THE

### DUSSELDORF

WROUGHT IRON STEAM TUBE WORKS.  
TUBES FOR BOILERS, PERKINS'S, and other HOT-WATER SYSTEMS.

For Catalogues of Rock Drills, Air Compressors, Steel or Iron Steam Tubing, Boiler Tubes, Perkins's Tubes, Pneumatic Tubes, and all kinds of Machinery and MINING PLANT, apply to—

60, QUEEN VICTORIA STREET, E.C.

### JOSEPH FIRTH AND SONS' New Patent Brick-making Machine

Embraces the following advantages—viz.:

Simplicity, strength, and durability. Compactness and excellence of mechanical arrangements, large producing capabilities, moderate cost.

It will make 12,000 to 14,000 plastic pressed bricks per day, hard enough to go direct to the kiln without drying.

WEBSTER HILL, DEWSBURY.

[See Illustrated Advertisement every alternate week.]

### "Kainotomon" Rock Drill

SELECTED BY THE

BRITISH, PRUSSIAN, & SAXON GOVERNMENTS.



**SUPERIOR AIR COMPRESSORS.**

**T. A. WARRINGTON,**  
30, King-street, Cheapside, London.

For Excellence  
and Practical Success  
of Engines.



Represented by  
Model exhibited by  
this Firm.

**HARVEY AND CO.,**

ENGINEERS AND GENERAL MERCHANTS,

HAYLE, CORNWALL,

LONDON OFFICE.—186, GRESHAM HOUSE, E.C.

MANUFACTURERS OF

PUMPING and other LAND ENGINES and MARINE STEAM ENGINES of the largest and most approved kinds in use, SUGAR MACHINERY, MILLWORK, MINING MACHINERY, and MACHINERY IN GENERAL. SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF

HUSBAND'S PATENT PNEUMATIC STAMPS.

SECOND-HAND MINING MACHINERY FOR SALE,

IN GOOD CONDITION, AT MODERATE PRICES—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES; STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of various sizes and descriptions; and all kinds of MATERIALS required for MINING PURPOSES.

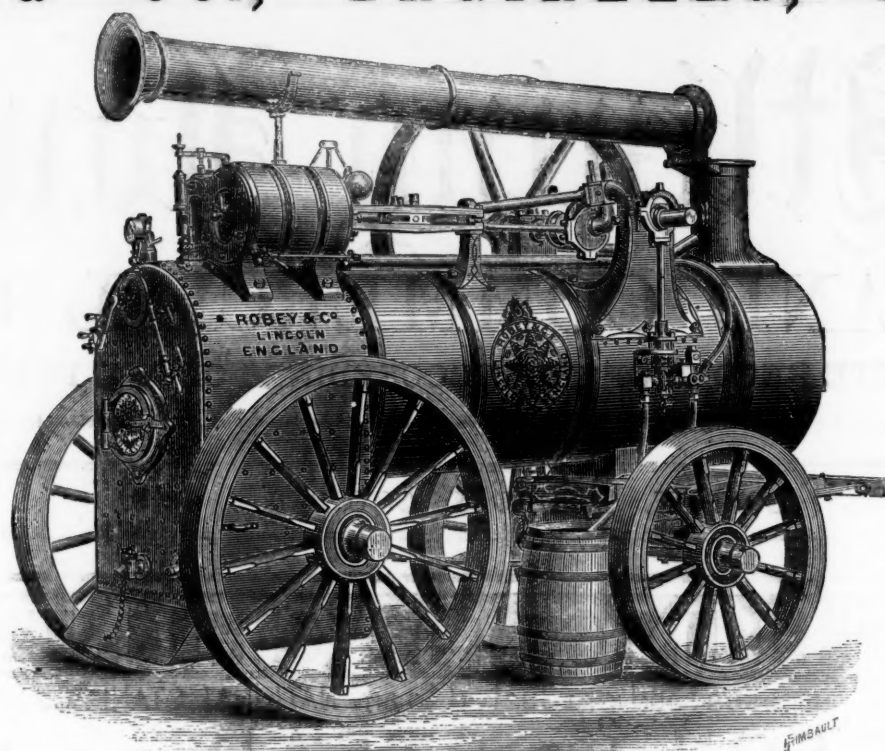


# ROBEY & CO., ENGINEERS, LINCOLN.

PARIS, 1878, — GOLD MEDAL.

PARIS, 1878, — GOLD MEDAL.

Fire-boxes can be arranged to burn wood and inferior fuel. Engines from 2 to 50-horse power always in stock or in progress.



These Engines are specially suitable for driving Mortar Mills, Ore Crushers, Saw Benches, Pumps, Brick Machines, &c.; and they are fitted with all latest improvements for economising fuel.

## IMPROVED PATENT PORTABLE STEAM ENGINE.

Some of the advantages of ROBEY AND CO.'S PORTABLE ENGINES are—

GREAT STRENGTH IN ALL PARTS, WITHOUT EXCESSIVE WEIGHT.  
EXTREME SIMPLICITY OF DESIGN.  
FIRST-CLASS WORKMANSHIP, AND BEST MATERIALS.  
GREAT ECONOMY OF FUEL. EASE OF MANAGEMENT.  
ABSOLUTE SAFETY IN WORKING. GREAT POWER AND DURABILITY.

FOR PHOTOGRAPHS, FULL PARTICULARS AND PRICES, APPLY TO—

**ROBEY & CO., ENGINEERS, LINCOLN.**

References can be given to upwards of 5600 ENGINES of all sizes, from 2 to 50-horse power.

## MECHANICAL VENTILATION OF MINES.

**THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.)** undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialities are: The absence of necessity for costly erections in masonry and brickwork; the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on

Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect.

[Estimates and further information will be prepared on receipt of the necessary particulars.]

**FOR SINKING PURPOSES**, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

**NOISELESS BLOWING FANS**, for Smithy Fires, and other purposes.

**TURBINE WATER-WHEELS**, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

**THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),**

PNEUMATIC AND HYDRAULIC ENGINEERS

(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),

2 CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.

## BELTING versus GEARING.

Of late years a great change has been gradually taking place in the Mills and Manufactories of Lancashire and Yorkshire by the substitution, betwixt the Engines and Shafting, of Belting for Gearing, thus doing away with all noise and vibration, as well as wonderfully reducing the cost of repairs; and so manifest are its advantages that driving by Gearing will soon be the exception.

As a still greater improvement, we beg to submit our Wrought-iron Drums (Rodgers's Patent), of which we are the Sole Makers. Their special merits may be briefly stated as follows:—

1.—These drums absorb less of the power of the engine in friction than any other mode of driving.

2.—Leather belts on these drums will drive considerably more than cast-iron ones, and the belts last much longer.

3.—These drums are not only considerably lighter in the larger sizes, but also infinitely stronger than cast-iron ones.

4.—In case of fire they suffer little damage. We have repaired many hundreds that have been in very serious fires, generally at about 25 per cent. on first cost.

5.—For MAIN DRIVING purposes they are invaluable, especially in case of a new mill, as they do not require such substantial and heavy building construction as is necessary in ordinary cases to withstand the constant vibrations of gearing.



6.—The wrought-iron drums and belts are more easily and quickly fixed than gearing.

7.—Greater economy in steam power, as it requires less power to transmit the same effective force with belt than it does with gearing.

8.—Very much greater economy in subsequent repairs as compared with gearing.

9.—The power is transmitted evenly, faithfully, and noiselessly, and without the vibration arising from defective or worn gearing.

10.—They require no cases for transport or shipment.

In support of the foregoing statements, we may say we have already supplied upwards of 20,000 of these Drums for use in Great Britain and Ireland, and have also exported them largely throughout the Continent of Europe, India, and the British Colonies.

These drums being made by special machinery, can be made any diameter up to 24 feet, and also any width up to 4 feet, and to fit any size of shaft.

FOR PRICES OF RODGER'S PATENT WROUGHT-IRON DRUMS, APPLY TO

**HUDSWELL, CLARKE, AND RODGERS, RAILWAY FOUNDRY, LEEDS, ENGLAND.**

SOLE AGENTS FOR LANCASHIRE, CHESHIRE, AND NORTH WALES:—WELCH AND SCOTT, MARKET STREET, MANCHESTER



## Original Correspondence.

## COPPER MINING ON LAKE SUPERIOR.

SIR,—I append products of Lake Copper Companies for August:—

	Tons.	lbs.
Calumet and Hecla.....	1326	345
Osceola.....	153	0
Franklin.....	140	100
Atlantic.....	133	1030
Quincy.....	130	315
Allouez Tribute.....	50	165

There is nothing specially new to notice since my last. The price of copper is apparently a little stiffer, but while production is in excess of consumption any material improvement in price would appear to be remote.

In Marquette County, where the iron mines of this State are principally found, times are quite lively. There is ready sale for all the ore that can be got out, and many more men are finding employment than for several years past. There is little, if any, surplus labour in the iron or copper districts, good men finding ready employment, especially in the iron mines.

I note with pleasure and some amusement the remarks of Capt. Southey on the treatment of tin ores in Cornwall. It all comes back to me in a moment, and as it was in the old days so to a great extent is it yet. The wheeling underground in a barrow "to keep the whim going," the filling of the "kibble" with the shovel. The horse whim hoisting 60 kibbles a "core," besides sending down timber, and no good lander worthy of his name ever forgot the timber. Then came the tributer to "divide" his own stuff for measuring and sampling, and after him Capt. Southey's description of the *modus operandi* is good.

A mining country that can afford to dispense with a well-equipped rock-house provided with Blake's or Marsden's breakers has certainly a good deal to learn in the direction of economy. I went through the dressing-floors of one of Cornwall's important tin mines six years ago, and noticed the running of the stamped material into round buddles without any attempt at separation of the slime from the sand. Without seeing this I would not have believed it, but from that time I have never been at a loss to account for tin in the Red River. Capt. Southey is right: mechanical dressing as well as doing all other work possible mechanically is not only cheapest but the most efficient.—*Calumet, Mich., U.S.A.* J. D.

## NOVA SCOTIA.

SIR,—In my letter of July 22 I hazarded the assertion that, so far at least as gold mining was to be considered, the prospects of the Nova Scotian miners were at that date unquestionably good. What information I have since that time been able to gather from the various mining districts fully confirms that impression. For months past that feeling of confidence in their own pursuit, which, as I have already observed, is a very fluctuating one, has been steadily on the rise in the breasts of those engaged or interested in gold mining, and this for the best of reasons—i.e., their operations were fairly and uninterruptedly successful. Recently, special instances have occurred of more than ordinary success in certain districts. The natural consequences of these are a great upward impulse of feeling and increase of confidence on the part of the miners generally, and this influence has largely communicated itself to those outsiders who are in more close contact with the mining population.

The new excitement—for such I may venture to call it—which has just sprung up in connection with gold mining is due to certain recent discoveries in two of the gold districts—Montague and Sherbrooke. I may as well here state that, even yet, very little has been done in the way of thoroughly prospecting any portion of any of the known auriferous territory of Nova Scotia. By thorough prospecting I mean drifting across the metals at a considerable distance from the surface, and thus ascertaining the number, thickness, and general character of the quartz lodes comprised within the section of rock so cut through, and at a depth not unfavourable to easy and profitable mining. The method, if I may so call it, almost invariably pursued hitherto is to explore only upon or from the surface of the country. When a quartz lode is there hit upon—in most instances the original discovery has been purely accidental—if where it is first exposed it should prove to be unquestionably auriferous, a shaft is there sunk forthwith. This lode is mined downwards and longitudinally so long as it continues to prove auriferous. Perhaps I should have said "so long as highly auriferous;" for gold-bearing quartz of a low grade finds but little favour in Nova Scotia, especially in the continued mining of a lode which in its earlier exploitation afforded a notably rich yield. In this way workings are often carried to great distances along the line of the lode, and to very considerable depth, whilst all the while the miners were unconsciously working within a few feet of another and a parallel lode—perhaps several of them—no less rich in gold than that on which they were engaged, but which only accident has eventually made known, perhaps long after the first lode had been abandoned.

This Montague district, named above, is only about six miles from and eastward of the city of Halifax, and directly upon one of the main postal routes of the province. Mining operations commenced in this district about 1863. On reference to the annual official reports of the Mines Department for several years subsequently, I find that the results of mining in Montague, as compared with other districts, showed remarkably slight fluctuations. Its average yield of gold, whether in proportion to the capital or the labour expended in winning it, varied but slightly from year to year, and it was always sufficiently high to yield large profits on the outlay. Failure in any instance was scarcely known, if it all, and in various instances what in this country would be called "snug fortunes" were made at Montague. Yet in that district mining property has changed hands with even more than usual frequency, and seldom, if ever, to the advantage of the prior occupant. The usual routine has been something like this. A mine proprietor alights upon an auriferous quartz lode, upon which he at once proceeds to operate, not always scientifically, but still very profitably. In process of time, and owing to causes which need not surprise anybody who has made the auriferous deposits of Nova Scotia his study, he finds a diminution in the returns of his mine. Straightway he becomes discouraged, suspects it is "played out," sells his property for the first offer, or abandons it to be forfeited to the Crown under the law, and goes elsewhere or takes up some other occupation. His successor, with the enterprise and energy of an as yet undaunted faith, sinks deeper or drives further upon the abandoned lode, or he stumbles upon a new lode, and his round of growing success and eventual needless discouragement is very similar to that of his predecessor. Then follows another, and another. This is indeed the experience of most of the gold mining districts of Nova Scotia, but Montague affords perhaps the best illustration of a too prevalent mode of procedure.

After what I have just stated, it will be no matter of surprise that only a few months since this Montague district was all but totally abandoned. But there are nearly always some solitary persevering prospectors prowling about in these gold districts, even when at their worst. For years past it has been known, from quartz fragments found strewn through the surface soil, that somewhere in Montague there was an exceedingly rich lode as yet undiscovered. From the tint of the quartz this undiscovered treasure was called the "Rose lead." During the past spring or early summer the long sought Rose lead was at last discovered—or, at least, what is believed to be the only genuine Rose lead—but there may be many of them. At all events, this one will do pretty well. Where first found upon the surface of the rock the quartz lode was only 6 in. thick, but with this thickness it gave 5 ozs. of gold to the ton of quartz. At a depth of 50 ft. the lode had increased in width to 20 in., and was still widening. The quartz, too, at that depth was estimated by experts to promise a yield of not less than 8 ozs.—some said as high as 15 ozs.—per ton. I have not yet been able to learn whether recent crushings have caused these expectations to be realised or not.

Then, in Sherbrooke—a district about 90 miles eastward of Halifax as the crow flies—there has been during the past few months, and as the result of a new "find," an exceptionally large yield of gold—ex-

ceptionally, that is, compared with the average yield of that district for some time previously. Here, too, the new and profitable discovery has been made in ground which has been tramped over for 17 years past, and situated in the very heart of the district. Yet mining in Sherbrooke, I may say, has been carried on more perseveringly—and, as a natural consequence, more successfully—than in any other district of the province.

The exceptionally rich "strikes" mentioned above, with several others of a less notable character made about the same time, have had a stimulating effect upon gold mining generally throughout the province. On every hand one hears of mining lessees, who had long remained inactive, or had disappeared from view, now again turning up to see if their abandoned mines may not, after all, have yet more and unsuspected wealth concealed in them. As a consequence, much increased activity in mining for a long time to come, and with very profitable results, may be fairly anticipated.

This letter only very briefly, but fairly, illustrates one phase of gold mining in Nova Scotia.

G.NOME.

## SLAVERY IN THE MINES OF THE S. JOAO DEL REY COMPANY.

SIR,—In a recent speech in the Chamber of Deputies of St. J. Nabuco, the liberal and eloquent member for Pernambuco called attention to the great number of slaves in Minas, at the Morro Velho Mine of the S. Joao del Rey Company, who have been legally free since 1859. Lord Derby and also Lord Salisbury have been in correspondence with the British Minister here for the last two years on this subject, as it was generally known that these people (belonging to an extinct company) were unjustly held in slavery; but it is only now that the document which gave them their freedom has come to light. A suit has been going on in Sabara and Ouro Preto about two years, but the slave interest is so powerful in Minas Gerais (all judges, advocates, magistrates, &c., being slave-owners) that there is little chance of these people getting their freedom there. Probably on appeal to the Supreme Court of Rio they may get their freedom, but, in my opinion, the speech of S. Nabuco has virtually taken off their fetters. My motive for sending you these papers is to enlist your sympathy on their behalf, as it is certainly no credit to the English nation to see a great number of free people reduced to slavery, contrary to all law and justice, by an English company. These people have been well fed and well clothed, but paid only for working on holidays, and amongst them are many very intelligent creoles, who know how to appreciate freedom and feel their position very much.

I knew personally Mr. Walker (the former superintendent), Mr. Gordon (the late one), and also Mr. Morrison (the present manager), and can only speak in highest terms of them personally. No doubt to govern some hundreds of "involuntary workmen" rigid discipline would be necessary.

W. MORRITZ.

Petropolis, Rio de Janeiro, Sept. 7.

## TRIAL OF SAFETY-LAMPS AT WIGAN.

SIR,—Your correspondents "An Engineer" and "M. E." agree, or rather the former agrees with the latter, that "no information of a reliable character can be said to have been afforded as yet by the experimenters" (which latter term includes Hetton, Cannock, and Wigan); and, therefore, as one of the experimenters in the last-named series I would ask them both to give us the benefit of their advice either through your Journal or personally, and state the means we ought to adopt to make "the information of a reliable character." I have little doubt but that both these gentlemen have some idea how to arrive at this desirable result, when they censure in such strong terms; and, therefore, we may hope to have their plans in an early edition of the Journal.

Referring to the letter signed "R. T. M.," dated Sept. 18, I would ask your correspondent whether a Dickinson's anemometer is capable of measuring with accuracy the velocity of an explosive current of fire-damp and air? His argument, as far as it goes, does not convince me that a registered velocity of 500 ft. ought to be 675 ft., or that the velocities indicated in the Wigan experiments are erroneous.

Southport, Sept. 27.

JAMES ASHWORTH.

## RUSTLESS IRON.

SIR,—The great interest which has been taken in Prof. Barff's process for the prevention of corrosion on iron surfaces by all connected with the iron trade has led us to undertake the supply of goods protected by it. The process, shortly described, consists of passing superheated steam over the iron goods to be treated whilst at a red heat, and can be applied to all kinds of ironwork, rendering it absolutely rustless at a less cost than galvanising.

Wrought-iron tubes and a host of similar goods are peculiarly well adapted for the application of Prof. Barff's process, and we have an iron chamber 12 ft. long, specially built for treating this class of goods, whilst a chamber 7 ft. x 3 ft. x 12 ft., which we built to coat a considerable quantity of large iron railings for the Duke of Norfolk, enables us to treat all kinds of ironwork of any ordinary dimensions. The protected articles have been subjected to severe tests by various individuals and firms, and satisfactory testimonials have been received as to the results.

Cannon-street, Sept. 30.

JAMES E. SPENCER.

## THE IRON AND STEEL INSTITUTE IN SESSION AT LIVERPOOL.

SIR,—The Mayor of Liverpool, as Chairman of the Local Reception Committee, and an eminent shipbuilder, inaugurated the proceedings by stating that a great future is open to a high-class steel in the matter of shipbuilding, which, in the words of the President of the society, is seriously interfered with by the restrictive stipulations as to the use of an extremely high quality of steel for the hulls of ships, in technical terms, in consequence of the very high tests demanded by Lloyd's Registry, the Admiralty, and other public bodies. Dr. Siemens urged the necessity of having for shipbuilding a highest class steel, thus—"Don't diminish your tests, but rather increase their severity." I reiterate that from Swedish Lapland is only to be had such high class steel, from which sulphur and phosphorus are totally eliminated. It is well known that chemistry is upon a much higher basis in France than in this country, and M. Poncelet's paper on the "Dephosphorisation of Iron and Steel," is of far greater interest in point of deep research than any other before the meeting. He truly states that without a high temperature the problem of dephosphorisation cannot be solved, which is fully confirmed by the proceedings of the Institute of Civil Engineers, Paris, at their meeting on May 7, 1875. There is no possibility of attaining the highest temperature indispensable than by means of my system of voltaic-electricity, engendering oxygen and hydrogen, the latter at an insignificant cost, the former, considering all concomitant circumstances, in no manner involving a charge, so as to interfere with the best industrial and scientific results. It must be borne in mind that by no means is it imagined to descend to a comparison with the Bessemer process, of which Sir Henry, as shown in my letter in last week's Journal, gives a deplorable description. The proceedings of the preited Liverpool meeting show that dephosphorisation by the Siemens process also was not practicable. The unimpeachable Text-Book of Chemistry (Watts) denominates the so-called steel rails "a kind of steely iron now so much in demand for rails—remark, not steel, but steely iron, the resistance of which, with phosphorus not eliminated, is diminished by cold, as experienced in Canada, the United States, and Russia, and, therefore, fraught with danger to the lives of Her Majesty's subjects, for which purpose measures will be taken to arrest the headlong progress of laying down such imperfect rails.

As to Mr. Bell's remarks about some few north-eastern rails, qualified by his statement that "it would be premature to ask the makers to say anything about the cost of such rails, which was the crucial test," would it not have been more candid if Mr. Bell, who is a large Cleveland ironmaster, a North-Eastern Railway director, and M.P. for Hartlepool, had been more reserved? With the "mise en scène," Mr. Bell will permit the public to regard his statement as perfectly valueless—indeed, as "nulle et non avenue," whatever benefit he may imagine may accrue to the Cleveland district, in which he is a leading

magnate, and which, at all events, is thus advertised. "O tempora! O mores!"

I find Dr. Charles William Siemens reputed a constellation of first magnitude in the Institute, the patentee of the Siemens regenerative gas furnace for steel making, took out a patent, No. 167, on Jan. 22, 1861, the essential point of his invention (line 35, p. 3, and follows on p. 4) in the specification being the inclined grate. Am I "en regle" in appealing to the members of the Institute to compare aforesaid with my patent, No. 2255, of which I enclose a lithograph, sealed April 7, 1854, for 14 years, 7 years antecedent to that of Dr. Siemens being taken out, and to say if it be not a direct infringement of my patent—in fact, the identical essential of the whole patent. I submit the position of the Institute is at stake until this matter is cleared up. I comprise his patents No. 972 in 1863, 2413 in 1866, 2395 in 1867, 1575 and 2988 in 1869, and 700 in 1878 under the same head. My letter on the "Monopoly of the World's Consumption of Steel by Swedish Lapland," in the Journal of Aug. 16, 23, and 30, and Sept. 13 and 27, adduce convincing proof of the correctness of the heading

20, Little Tower-street, Oct. 1.

WM. JOSEPH THOMPSON.

## HAND-POWER DIAMOND DRILL.

SIR,—You are aware that for some time past the lower quality of South African diamonds have been almost unsaleable, owing to their abundance, and you are probably, also, aware that Messrs. Parke Pittar and Co. are probably the largest dealers in these minerals, so they are well able, when necessary, to guarantee a regular supply at a fixed price. This latter is essential if the machine is to come into general use which Mr. Parke Pittar has just invented in connection with Mr. C. A. Terrey, of Southwark. The object of their invention is the construction of a boring machine whereby the hardest rock may be bored by hand labour, and cores brought out showing clearly the nature of the strata through which the diamond drill has passed. The main features of the improved rock-boring machine are the compactness obtained by the general combination of its parts, and the facility with which long cores may be extracted by the addition of sections or lengths to the borer, whereby this machine is specially adapted for trying the quality of lodes in galleries too narrow to permit the use of long jumpers or percussive drills with advantage, even if angled; the machine also comprises an improved feed motion, automatically regulating the rapidity of the forward movement of the diamond drill head according to the hardness or softness of the rock or stratum through which it is penetrating.

The speed of rotation is accelerated by the use of toothed wheels, &c., and in my opinion more work could be got through with the new drill than with any other apparatus worked by manual labour with which I am acquainted.—Sept. 29.

ENGINEER.

## THE SCIENCE OF MINING.

SIR,—The proper conduct of mining throughout its various ramifications may be said to be its highest science, whether resulting in pecuniary success or not. I have certainly at some time or other stated in the columns of your Journal that the next best thing to discovering that a mine or mines are good is with the least possible expense to discover that they are not. And when such a discovery and conviction are arrived at, in whatever respect it may be, the future course in respect of them should be regulated on the merits alone. Agents should not hesitate to express their inward convictions concerning them, whether *pro* or *con*, according as the several circumstances may dictate. Trial mining is speculative. Its object is by careful, vigilant search by comparatively inexpensive methods to discover whether or not certain superficial indications of metalliferous minerals are genuine indices of their existence and proximity. In some instances the evidence is so unreliable, from the containing rocks and the lodes themselves being so little exposed to ocular view, and there being at the same time in respect of such object a sort of magnetic attraction exerted on the miner, a desire is induced to make some practical experiments for the purpose of acquiring fuller information concerning the reality or otherwise of the things indicated, and a knowledge for the exercise of judgment on a basis of facts.

But this desirable and necessary knowledge cannot be acquired by the miner at his will. The land is not his, and he has no prescriptive right to invade its hallowed precincts. Permission must be obtained by a legal process of the legal owners of the soil and the minerals which may be contained in its underlying rocks before a spade can be employed to turn over a single sod. That this is right and proper no one will deny, as the rights of property must be respected, otherwise injustice, legalised or permissive, would be perpetrated, subversive of order, detrimental to progress, and pernicious to morals. The miner desires nothing of this kind, but, conscious of the dependence of every department of trade, commerce, the arts, sciences, &c., on his enterprise and industry for their progress, advancement, and success, he asks only for fair dealing and just consideration on the part of landowners whose interests in connection with his own—free of all contributions on their part—he seeks to promote and enlarge. It is too frequently the case that the owners of land or their agents affect an indifference to the miner's pursuit, and pretend to look upon it as if it were a questionable policy to encourage it at all, just as if it were a matter of utter indifference to all beside the miner whether it were prosecuted or not, apparently oblivious that mining and its products are the greatest source and instruments of wealth and human progress, and vital to a nation's prestige and pre-eminence. Such landlords by themselves or their agents appear to display the most unaccountable indifference to the miner, and affect to only condescendingly listen to his most earnest application for concessions to enable him to pursue his nationally indispensable vocation, just as though favours were being solicited at their expense, instead of regarding such applications as business propositions between man and man for the promotion and conduct of purely business pursuits; and, therefore, the terms on which concessions are granted are usually of an extremely one-sided nature—exorbitant rents and royalties, and in many instances compensation for land occupied, damaged, or destroyed are stipulated for and rigidly exacted. But in some instances compensation for land is not required, but that is when the land is useless for agricultural purposes or any other save for quarrying or for mining, and even then, the royalties being excessive, the exemption from land charges is more than compensated for by that condition. The affected indifference of landlords and their agents—with but few exceptions—to the mineral wealth and industries of the country betrays a state of mind and feeling which one would think could only proceed from insensibility of the importance attaching to such interests, vital to the well-being and advancing prosperity of the State, and which may be vitiated or rendered totally abortive of success in numerous instances by what appears to be a short-sighted policy or a chronic indisposition to concur in the promotion of this essentially prolific industry, baleful alike to party and public interests.

There are in Cornwall, and probably elsewhere, some noble exceptions to such blindness, whose example is an eloquent and standing rebuke to the selfishness and shortsightedness of many others. There is in them a generosity manifested which appears at first sight purely disinterested. At the same time, on closer examination, a political wisdom is observable in their conduct, which, whilst it is incalculably beneficial to the miner, is at the same time equally promotive of their own interests. They have long since learned that there is an identity of interest between themselves and the adventurous miner, and they are not slow in contributing on their part to its promotion. It would be well if all others similarly situated were equally farsighted and wise in their day and generation. Many a difficulty would be obviated, and many a stagnation and rueful suspension of mines averted. It is the callous unbending of sympathy and want of consideration on the part of many landowners which perplexes and disgusts numerous most liberal and enterprising shareholders, and paralyses efforts which a just consideration on the part of the landowners would have induced them to put forth and persevere in. There is no department of our national industry in respect of which more pluck and enthusiasm is displayed by English gentlemen than in mining, and no class of the community at large is more deserving of encouragement and success than it is, especially as the accordance of bare justice on legal and moral grounds is all it claims or asks. That this is a matter of vital importance to the interests of British mining



cannot be denied, and loudly appealing for redress from the abounding depression in the price of the metals by the formidable competition to which the home producer is subjected from foreign sources that nothing short of the greatest fostering care and scrupulous attention to all heads of liability, expenditure, and income can enable it to successfully hold its own against its formidable foreign rivals. The market of England being the great mart of the world, the English producers—of whatever wealth—are affected by those of all other countries, therefore the authors of all inexorably inflexible measures, whether in mining, trade, or commerce will most assuredly stultify themselves if persisting in an effort—which must prove abortive—to cross and subvert the inevitable course of events. Submission to circumstances which cannot be obviated, and a timely acquiescence in and adaptation to their uncompromising demands—uncontrollable by individual or largely combined efforts—can alone mitigate the misfortune or alleviate its otherwise disastrous consequences, and this certainly is no more or less than a prudent policy. Surely the preservation of one of our most valuable home industries is worthy the consideration of all whose interests are so intimately associated with the prosperity and well-being of mining, who should ever be foremost as exemplars of all that is good, generous, and patriotic.

The representatives of the Crown, which possesses a very large landed and mineral interest throughout the country, would do well to take the initiative in a much needed reform.

Llanvst Lead Mine, Oct. 1.

ROBERT KNAPP.

#### COPPER ORE TICKETINGS.

SIR,—Seeing that the four-weeks month has become a permanent arrangement, so far as regards the payment of miners, could not four-weekly ticketings be adopted in the place of the usual sales? I believe the scheme was proposed a long time ago, but was opposed by the Chairman representing Devon Great Consols. I imagine this company would only be too glad to accede to the arrangement, and it would be a great boon to all the mines in the Liskeard and Tavistock districts. Perhaps by ventilating the matter we may obtain the approval of the smelters.

SECRETARY.

#### TREATMENT OF TIN ORES.

SIR,—After replying to Capt. Thomas's first letter on the above subject it was not my intention to trouble you again. As I quite agree with Capt. Thomas—"it is useless talking and writing any more on the subject, a practical test is the only way to a mutual understanding"—I will content myself for the present in quoting one or two remarks made by Capt. Thomas in his letter of Sept. 23. "I wish it to be clearly understood that I recognise the jigger as an efficient and cheap separator of slimes and roughs." Now, with all due respect to Capt. Thomas as an able underground miner, of which there cannot be the slightest doubt, I am, in justice to this important question, under the necessity of telling him that he is tackling a subject of which he apparently knows little or nothing whatever about; this one remark alone proves it.

The jigger was never intended to separate slimes from roughs—in fact, the former, if I may be allowed to use the expression, is poison to the jigger. The separation should be made before the mineral is admitted into the jigger, and the freer it is of slimes the better the results. I do not profess to jig a sack of flour, but anything with the exception of very fine slimes the jigger will dress far more effectually than all the buddles in creation.

Capt. Thomas further states "the round buddle (in front of the stamps) into which slimes and roughs are received pell mell is effectual in making the roughs react upon and comparatively untin the slimes. In other words, the roughs form a filter, through which, assisted by the sweeps, the slime tin is filtered." Now, practice teaches me that it acts quite the reverse. I maintain, and am quite prepared to prove it, if the mineral in front of the stamps is first classified the slimes can be easier treated, and more tin will be realised therefrom.

Capt. Thomas's suggestion for me to put in a round buddle, which I have only just thrown out, to test it against the jigger in the interests of Cornish tin dressing is very cool. I suppose it has not occurred to him that it is in his power to erect a jigger on his own floors for the purpose; were he to do so I venture to predict he would do as I have done—throw the buddles out.

Allow me to tell Capt. Thomas the class of mineral (or stuff) from the mines named by him is not new to me, and during the past 30 years I have had many a hard-fought battle with very strong opponents in dealing with every class of minerals, many of which are far more difficult to treat than the one in question.

I now, in conclusion, repeat this for the third and last time—that with the mode of treatment I have suggested more tin will be saved with a considerable reduction in the cost.

London, Oct. 1.

RICHARD SOUTHEY.

#### TREATMENT OF TIN ORES.

SIR,—Seeing that this important subject is now attracting some of the attention which it so well deserves, with your permission I wish to state a few facts which seem to be ignored by some of your correspondents, and are apparently unknown to others. In the year 1871 Letters Patent were taken out on my behalf by the Patent Self-Acting Mineral Dressing Machine Company, of Glasgow, for a system of direct classification from the pulveriser, which patent consisted in an arrangement by which the classification was for all practical purposes perfect, and effected without any manual labour whatever; and the ores as they are classified are in a like manner without labour passed direct to machines having a motion correctly adapted to the size of the classified stuff it receives, thus forming the complete self-acting system so patented. Notwithstanding this, now in the year 1879, some of your correspondents are not unwilling to allow the mining public to believe they have originated the whole thing when they are simply pirates, and are liable to legal process. Under these patents I have constructed machinery which is dressing something like 25,000 tons of lead ore yearly in Great Britain alone, besides several mines who have imitated the arrangement are turning out a good deal of lead also, and I have no doubt the system will be universally adopted ultimately, and the only reason why it is not already done is because there is always a section of little minded people who dare not admit that anyone but themselves can possibly produce anything of real advantage.

I notice some of your correspondents are for jiggering and others buddling, but to deal with all ores a judicious combination of both is necessary, and Capt. Thomas is perfectly right when he says the buddle (of itself) would be a better separation than the jigger, and the reason is obvious with stamped tin ore. There is always a considerable portion reduced too fine for the jiggering action, and if put into the jigger a bad product and loss will result, while on the other hand a buddle is the machine adapted for the particles too fine for the jigger, and will deal with the rougher particles far better than the jigger will deal with the slimes.

There can be no doubt the perfect dressing of tin ores is a delicate process, and notwithstanding the loss now experienced in the operation, unless the projected improvements are worked out with a full knowledge of the subject and with the greatest care, it is not at all unlikely the cure will be worse than the disease. I know that it is impossible to prevent the fine tin being lost—that is to say, all of any practical value can be extracted from the waste, and also to save a large portion of the present labour cost; and if this were done even as far as is at present attainable, together with a more general application of the rock-drill, I believe Cornish tin mining would hold its own against the world, but one of the greatest, if not the greatest, of all hindrances to progress is that exclusiveness which too frequently prevails, and but for this as regards dressing tin, what is now being talked about would have been an accomplished fact to my certain knowledge a good many years ago, as Capt. Thomas very properly says it is of little use talking or writing on the subject. A practical test is the only way to decide, and I am prepared to give that test on fair conditions; others can do the same, but I must request they will not infringe our patent.

I am, therefore, open to receive any reasonable offer to erect my self-acting dressing machinery for dressing tin, and will guarantee in the saving of labour and tin a most satisfactory interest for the outlay, which is all that need be said now, and will only add that

the cost would not be high. The present low rates of labour and materials are in themselves advantages which those who look forward avail themselves of. I mention this as persons sometimes say, "Oh! these things are too costly; we must wait for better times," and which, I think, is a mistake.—*Aberystwith, Oct. 1.* GEORGE GREEN.

#### CAKEMORE, CAUSEWAY GREEN, AND LOWER HOLT UNITED BRICKWORKS AND COLLIERY COMPANY.

SIR,—I have the pleasure to inform "A Shareholder" that the application for a settlement and quotation on the Stock Exchange had been decided upon some time previously to his letter containing that suggestion, and that the necessary documents are accordingly being prepared. I agree with him that however firmly shares are held for investment, which appears to be peculiarly the case with Cakemore, it is always desirable to have a ready market for them at their fair value, which in this case is in my opinion even higher than the 50 per cent. premium which "A Shareholder" puts upon them. Stock in a company able to pay such handsome profits even in these bad times, and possessing all the requisite elements for returning regular and increasing dividends, must be appreciated as it becomes more widely known, even although it is very difficult to make people understand that any investment of which a colliery forms part is not of a risky and speculative character. It is a fact, however, that the freedom of this colliery from water and from danger of explosion removes the two great elements of risk, and also of cost, usually attaching to a colliery, and as there is no doubt as to the existence of the raw materials in almost inexhaustible quantities, and as all the requisite machinery for sending them to market cheaply and rapidly has now been provided, the business appears to me simplicity itself, and to be peculiarly free from any risky and speculative element; indeed, it resolves itself into a safe and legitimate investment in a home industrial undertaking—a class of investment which it would have been far better for English investors to have taken up instead of throwing away millions in worthless foreign loans and speculations.

London, Oct. 2.

A. W. SNELLING.

#### CAKEMORE, CAUSEWAY GREEN, AND LOWER HOLT UNITED BRICKWORKS AND COLLIERY COMPANY.

SIR,—I beg leave to second the suggestion of "A Shareholder" in the Cakemore Company that the directors should endeavour to get the shares quoted on the Stock Exchange. Having been lured by the unusual temptations it holds forth, I took shares to perhaps rather a larger amount than, considering my means, I ought to have done, and of course the time came when I was compelled to realise some. My usual broker, to whom I first applied, had never heard of the concern, and the company's broker had no buyer on his books, but might be able to find one if I left them with him. It is true I eventually sold my shares at a profit, but it took me some little time to get the money, and I am quite convinced I did not realise anything like the real value of the shares, and that had they been quoted on the Stock Exchange I should have got a much higher premium.

Now, in case anyone should think my reason for wanting to sell shares was dissatisfaction with the company, I must state that I am rather an enthusiast about Cakemore. It is my *beau idéal* of a legitimate application of the Limited Liability Act—preliminary expenses trifling, capital moderate, no excessive directors' fees, and no lucrative appointments secured in the Articles of Association, the directors thoroughly practical men, some of them connected with similar businesses all their lives, all having *bona fide* qualifications in the large stakes they hold in the concern, and giving, as I can personally testify, as constant and active attention to the company's interests as if it were their own particular business, combining, in short, all the advantages of a private trade without the disadvantages of a partnership responsibility.

I have always considered that the one great object of the Limited Liability Act was to enable the general public to acquire without risk of partnership a share in the large profits constantly made by trade capitalists, and to develop the resources and increase the wealth of this country by bringing to the aid of its home industries a vast amount of small moneys, amounting in the aggregate to an enormous capital, which could in no other way be so applied. Unfortunately, however, this Act, which has been far more abused than legitimately used, was very soon after its inception pounced upon by unscrupulous promoters and rank speculators and others who live but to prey on the public, and was by them used as a vehicle for foisting their rotten schemes upon the unwary, who in their turn visited their own want of discrimination upon the luckless Act, until the British public—going, as they so often do, from one extreme to another—has come to hate the very name of a limited company, and now distrusts good and bad alike.

I was for many years secretary of a public company myself, and have in my business capacity been brought into contact with many others, both prosperous and otherwise, and I can most unhesitatingly say that it is the starting of companies with overweighted and often fictitious capital, the extravagant purchase moneys, the heavy preliminary expenses, and the secured appointments at heavy salaries to those who are frequently totally incompetent, that has tended to discredit an Act which, legitimately applied, should have proved an invaluable boon to the country.

Pardon this digression. I have unwittingly mounted my hobby, and have galloped on to an unreasonable length, but what I mean to imply is that the Cakemore directors, much to their credit, seem to have guarded, to a degree that I have never before seen, against all these errors, and it is, therefore, not only as a considerable holder of the stock, but also as an honest admirer of such a line of conduct, that I cordially wish them a continuation of the success they have so deservedly attained.

ANOTHER SHAREHOLDER.

Putney Hill, Sept. 30.

#### GOOD NEWS FOR NEWTON ST. CYRES

SIR,—“Fortune favours the brave.” A few weeks ago two of our old manganese miners met with a rare prize—a rich bunch of dark blue crystallised manganese, a few feet from the surface. One of these miners told me he worked near this spot 40 years ago on a course of ore 15 ft. thick.

We are looking forward to see this new discovery properly developed by an influential company. The advantages here are that very little machinery will be required, as the workings are thoroughly drained by a deep adit; and, besides this, the mine is only a mile from the Crediton Railway, and about four miles from Exeter.

Sept. 30

E. T. MAY,

Vicar of Newton St. Cyres.

#### MINES OF GREAT PROMISE.

SIR,—You are aware that there are several valuable discoveries of recent date in some mines in Cornwall and in Devon.

Wheal Peavor, in Redruth, is a very valuable mine, and likely to yield large profits for many years to come.

West Peavor, adjoining Wheal Peavor, and having the same lodes, is also likely to be equally rich. The company are about to work it with great spirit. A pumping and stamping engine is now in course of erection.

Wheal Boys, adjoining Wheal Peavor on the south, is another highly promising mine, where operations have been recently resumed. These three mines are under the management of Capt. White. The pursuer and chief owner of them is Mr. Thomas Pryor, of Redruth—a very successful speculator.

Wheal Prussia, south of and contiguous to West Peavor, was set to work by Capt. W. Tregay about two years ago, but is now idle, and is, I believe, the property of Mr. G. Williams, of Scornor, who I suppose will set it to work again, but some persons are of opinion that to work it effectually Cardrew old mine must be drained. If so a large outlay will be necessitated, but I do not know that that opinion is correct.

South Polgoth, about two miles west of St. Austell, is a tin mine of unsurpassed promise. I was there a few days ago, and had some of the tinstone “vanned.” The yield of black tin was about one-third of the whole bulk. A stamping-mill is about to be erected, when from a lode 10 ft. wide the tinstone to be reduced will, doubt-

less, leave a very large profit. Great Polgoth,  $\frac{1}{2}$  mile east, is said to have given from first to last 750,000l. profit, and the mine is now scarcely 150 fms. deep. It is to be re-worked. South Polgoth is in the hands of only two proprietors, who, no doubt, will be largely enriched thereby.

Wheal Crebor is in the Tavistock district, and is worked solely by water-power. About two years ago a shareholder requested my advice as to his holding or selling his interest. I advised him to “hold on;” whether he has done so or not I cannot say. If he has acted on my advice he will do well, for I understand they have a wonderful discovery in that mine.—*Oct. 3.* R. SYMONS.

#### LEAD, AND LEAD MINING—No. V.

SIR,—Since my last it must have become apparent to any observer of the statistics in your columns that the question of a further rise in the price of lead has become a mere question of weeks, or at most of months—the natural sequence of which will be an increased demand for shares in home lead mines of all descriptions, dividend, non-dividend, or progressive. You say yourself—“In lead mine shares considerably more business is reported, and as there is general confidence in the present price of lead being maintained there has been, it is said, some disposition to purchase for investment in several Welsh mines.” This is no doubt the case, Wales having attained considerable notoriety as a lead-producing country ever since the great Montgomeryshire mine (the Van) appeared upon the scene some score of years ago. Apropos of this I notice that a correspondent from Llanidloes reports the discovery of loose stones of lead of a very promising nature to the north-east. Hitherto all the ventures in the neighbourhood of this great mine have been disappointing; but there is no doubt of other and undiscovered valuable deposits in the vicinity. The ground to the west for several miles has been comparatively unexplored till we come to the belt of mines on the confines of Cardiganshire. There were some very favourable trials made on a farm called Hyddgen, in Montgomeryshire, about five miles to the west of the Van Mine; but whether they have been followed up or not, or if so with what success, I am unable to say—but I can say from personal experience that I have seen some magnificent lodes in various places in the district alluded to, but access being difficult there has been little done, and that little mere surface scratchings. Within the boundaries of Cardiganshire there were some very ancient mine workings; but for the most part they were abandoned—for what reasons it is hard to say. I have also seen a splendid deposit of lead at a place called Bryn-yr-Afr, which a private company were, when I saw it, driving a long cross-cut to come under. Whether they have yet cut the lode I am unable to say—I hope they will persevere till they do, as it is a most thorough and workman-like trial of the ground. I have been led into this digression by the remarks of your correspondent, “Trefeglwys,” and I trust to hear from him again that some new discovery has been made, and I hope he will be in a position to say that lead is no longer “a metal at a very low ebb indeed.”

The coming spring will, no doubt, be a very busy one for the building trade (one of our best customers for lead), and, as I have said before, stocks being low and foreign competition almost at an end, I should not be surprised to see the standard price of English pig-lead at a higher price than it has stood at during the present century. If these anticipations are justified, the present time is the proper opportunity for investing in lead mines. It is no use waiting until a general upward movement has commenced. Buy shares in concerns when you see the capital moderate, the amount of working capital sufficient, and where you find that the purchase consideration has been taken entirely in shares, and that in a moderate proportion to the whole capital. Lead mines, in the state in which the market for the produce has been for some time, have not been sufficiently good investments to justify cash payments; the vendors ought to be thankful to have obtained working capital without. This state of things is, of course, passing away, and expectation will rise rapidly (too rapidly, no doubt) in sympathy with the price of the mineral. Speculators must expect this and be plucky enough to anticipate it; and, in fact, any one who has not pluck, patience, and perseverance, had better keep his money on the “sweet simplicity of Consols.”

What a rapid rise can and does take sometimes place in mine securities is instanced in Wheal Crebor, the shares of which have risen from shillings to pounds in a very short space of time. These sort of surprises constantly take place in mining. I have known shares freely offered at 1s. each worth within a week 5l. and I dare say there are many of your mining correspondents who could give similar experiences. Mining is a lottery with a fair amount of prizes—rich prizes—and, of course, “nothing venture nothing win” must be the motto.

HOPEFUL

#### IS IT RIGHT TO PAY PURCHASE-MONEY FOR MINES?

SIR,—I am not sorry that the gentlemen who have been writing so largely on the above question are tired of doing so, which I infer from the discontinuance of their communications. Such a question might be excused in any man known to be *non compos mentis*; but for men of some literary talent (as those writers appear to be) to discuss such a question is really surprising. They might as well, with equal propriety, ask “Is it right to pay for anything?” Is it right to pay for a farm, a house, or for Dolcoath Mine? The question is not limited to speculative mines, concerning which, in many cases, the answer might properly be in the negative; but it applies to mines in general; and as there are many mines in Cornwall and elsewhere giving dividends of profit, what man, possessing common sense, would propose such a question in relation to them? There are Wheal Peavor, Dolcoath, Tincroft, Wheal Crebor, &c., which, from the immense reserves of ores opened up, cannot but command high prices, or “purchase-money,” in the market.

R. SYMONS.

Truro, Oct. 3.

#### MARKE VALLEY MINE.

SIR,—As a shareholder, who will not be present at the meeting to be held next Wednesday, I would suggest the use of a boring-machine for driving the 90 fm. (pioneer) level to this mine. I would also ask whether this level is not too deep to catch the ore in the West Rose Down part of this set, seeing that the last bunch did not hold down to the 90?

W. P.

#### MINING IN THE LLANARMON DISTRICT

SIR,—My attention being attracted to this district by a series of letters and articles recently inserted in your valuable Journal I felt a strong inclination to pay a visit to the locality, the desire being fostered by a vivid recollection of long past experiences with friends connected in the Old Westminster Mines during the many years of their extraordinary productiveness. Having satisfied my inclination I accordingly found myself once more on the scene I so well remember; but, alas! how changed. The busy throng of workmen streaming forth to descend the lower regions to blast to atoms the glistening pillars and blocks of ore embedded in its rich veins, a like stream coming forth from their arduous labour, with a sprinkling of the bright dusty metal powdered over their miners' clothes, and their beaming countenances, expressive of a hard day's work and a heavy day's pay (for in these days the workmen shared in a liberal proportion the prosperity of their employers). The powerful pumping engines, incessantly steaming and pumping throughout the day and night; the hammering, stamping, crushing, and dressing. Where were all these—and the fine old hospitable manager, whose genial face was indeed a pleasure to look upon? All past away, and now nothing to denote them but great long heaps of waste hillocks and the ruins of many engine-houses. At the time I mention, some 30 to 40 years ago, these mines were constantly returning about 300 tons of ore monthly, and had been doing so for many years during the time I visited them with my friends, who were shareholders, with whom I had many delightful rambles over the hills, and participated (need I say) in the good cheer which would have gladdened the heart of a king after such appetising strolls. It was at such times, and having the advantage frequently of the first men in the mining profession, who would be called in for consultation, that I gleaned a fund of information touching the capabilities of this particular locality; but I must admit at the time I did not pay so much attention as I would now have done, being imbued with the notions that miner were



mines, but he had never seen any pitwork equal that in this mine. He had no idea that such an amount of work could have been done in the 12 months. He went through the levels, and it was at his suggestion that the 64 cross-cut south was continued. It was stopped, having gone through hard ground, but when he went with Capt. Southey to the end of the 64 cross-cut he noticed several branches of spar, and upon working upon them for a short time with a pick he found a *tona* *de* change for the better, and he, therefore, offered to go half the expense of driving there if Capt. Southey would pay the other half, and this Capt. Southey agreed to, in the event of the shareholders not sanctioning the outlay.

The SECRETARY, in answer to the Rev. Mr. Fletcher, said the cost of driving the end was about 16*l.* per month.

Capt. SOUTHEY said he was so well satisfied with the prospect of the driving that he had expressed his willingness to pay half the expense.

MR. SHARP said that before he went down to the mine he had an idea of giving up his shares, but that before he paid his calls at the time of his last visit he had determined to hold his shares and pay his calls upon them, being thoroughly satisfied with the management and the manner in which their money was laid out. He had known Mr. Sharp for 10 or 12 years, and had every confidence in him as their secretary.



The CHAIRMAN then called attention to the financial position of the company. He said the 5s. call produced 8744. 3s. The mine was now in debt 6222. 5s. 4d., and, therefore, another 5s. call would only just wipe off the debit balance. Therefore, it was thought desirable to have a 7s. 6d. call, and he proposed a call of 7s. 6d. per share, payable on or before Oct. 21, and that discount of 5 per cent. be allowed upon calls paid before that date.—Mr. BARROW seconded the resolution.

Rev. Mr. FLETCHER said the calls would come hard on many shareholders, and suggested whether a 5s. call would not be sufficient.

The CHAIRMAN said that the only wish of the committee was to have a sufficient amount to go on with comfortably.

In the end it was decided to make a call of 6s. per share, Capt. SOUTHEY stating he thought that would be sufficient to meet the requirements of the company.

Mr. BARROW then drew attention to a model of Jordan's hand-drill and after drawing attention to its many excellencies, suggested that the committee should take into consideration the desirability of trying one of the drills in East Chiverton.

The suggestion was unanimously adopted, and Mr. Sharp, Captain Southey, and Mr. Hockin were requested to inspect the drill, and see if any and what arrangements could be made for the introduction of one of the drills into the mine.

On the motion of the CHAIRMAN, seconded by Mr. ROBINSON, the committee were authorised to forfeit all shares on which more than one call was due.

A vote of thanks to the Chairman and executive closed the proceedings.

#### WEST CHIVERTON MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Gresham Buildings, Basinghall-street, on Tuesday (Mr. THOMAS SMITH in the chair), to pass the accounts for the sixteen weeks ending July 12 last, and to transact the general business of the company.

Mr. GRANVILLE SHARP (the secretary) read the notice calling the meeting. The report and accounts were taken as read.

The CHAIRMAN said the accounts showed a balance in favour of the mine of 12764. 8s. 10d., and the profit upon the four months' working had been 394. 6s. 1d.

Capt. SOUTHEY then read his report, which was as follows:—

Sept. 27.—Batters Engine-Shaft: In the 170 fm. level cross-cut, north of shaft, we have not yet intersected the lode, but expect to do so in a few feet further driving. The lode in the 160, east of shaft, is 2½ ft. wide, and worth for lead 54. per fathom. In the 160, west of shaft, the lode is 3 ft. wide, very promising, and producing occasional stones of lead ore.—North Lode: In the 160, east of cross-cut, west of shaft, the lode is 4 ft. wide, worth for lead and blende 64. per fathom; the lode in the same level west of cross-cut is 3 ft. wide, and worth for lead and blende 64. per fathom. In the 150, east of cross-cut, west of shaft, on north lode, the lode is 3 ft. wide, worth for lead and blende 104. per fathom. In the 150, east of shaft, on south lode, the lode has recently improved in value, and is now 2½ ft. wide; worth for lead 204. per fathom.—Hawke's Engine-Shaft: The lode in the 140, west of shaft, is 3 ft. wide; worth for lead and blende 94. per fathom. In the 140, east of shaft, lode 3 ft. wide, producing good stones of lead. The lode in the 110, west of shaft, is 4 ft. wide, worth for lead and blende 64. per fm. At the 70 cross-cut, south of this shaft, the ground has lately become easier for driving, and is letting out a considerable quantity of water, and presents indications of our being in close proximity to a lode. Our machinery and pitwork are now in an efficient state, and have during the past four months been working remarkably well. The upward tendency in the lead and spelter markets have enabled us to realize a slightly increased price for the former article, and to sell a considerable quantity of our lower produce blende ores to advantage. You will see from the foregoing that we have two cross-cuts driving, one at the 170 at Batters' the other at the 70 at Hawke's, in either of which a good lode may be intersected any day, which would of course greatly enhance the value of the property. The 70 cross-cut is going out south in undeveloped ground parallel to where the present lode made its richest, in which there is known to exist side lodes that have not yet been seen in this sett.—R. SOUTHEY, W. ROBERTS, J. MOYLE.

Mr. BARROW said he noticed by the accounts that the sum of 25000. was due to a shareholder on loan. He asked what interest was being paid on that loan? He had great pleasure in moving that the agent's report be received and adopted. He thought that under the circumstances the report was as favourable as could be expected. They had been labouring under great difficulties. The price of lead had not improved to the extent expected; nevertheless, he thought, on the whole, the returns were favourable, and if the points turned out as well as Captain Southey hoped there was no doubt it would still be an excellent mine. The 70 fm. level on which they were now driving was in a parallel position to the lode on which the old company made and commenced to make their very large riches; in fact, at that point no other mine in Cornwall had been known to be so rich in silver-lead ore, and there were hopes that they might at any moment come upon a good lode of lead at this cross-cut.

The SECRETARY: It was between the 70 and the 110 or 120 that the bunch produced 150,000. in dividends.

The CHAIRMAN then proposed that the agent's report be received and adopted. Mr. BARROW seconded the resolution, and considered the report essentially satisfactory. He had been underground twice in the last 12 months, the last time being as recently as August. He believed that Capt. Southey had understated the value of the ends.—Capt. SOUTHEY: I prefer being on the safe side.

The resolution was then put and carried.

The accounts for the 16 weeks ending July 12 last were then passed.

The CHAIRMAN said that since the last meeting they had not been able to make the progress they hoped and expected to do. At the time of the last meeting the mine was under water, and had been so for some length of time. At the meeting it was stated that the mine would be unwatered in a few days, and this was done in due course. As the water had been in the mine close upon four months it was found that much damage had been done by the heavy fall of soft ground and the deposit of mud, which required some time to clear away. The re-timbering was also very extensive, and took some time in doing, interfering very much with the regular course of work, as they could not commence stopping until it was re-timbered and fairly secured, which, of course, affected the returns of mineral.

As the calls did not come in so quickly as they should have done the committee were placed in a somewhat unpleasant position for want of funds, but his colleague, Mr. West, had advanced 25000., at only 5 per cent. interest.

Mr. BARROW: What security has he?—The SECRETARY said none at all.

Mr. BARROW: It shows Mr. West has confidence in the mine.

The CHAIRMAN said the mine was now in good working order, and making fair progress. There were two or three causes of satisfaction within the last few weeks. One was that the price of blende had advanced considerably, and a month ago the company sold 1000 tons at 22. per ton, and he might mention that at the last meeting the quantity of blende would not fetch more than 5s. per ton. The notice calling stated that it was proposed to make a call, but the committee were happy to find that, under the circumstances he had mentioned, they would do without making any call, and this was a source of great satisfaction. The committee were always sorry to suggest calls, because they came heavy upon the shareholders, and, therefore, they avoided making a call if possible; but then there were circumstances when it could not be avoided, and if Mr. West had not come forward he did not know what they would have done. There was a resolution passed some 12 months ago to the effect that the committee should not overdraw the banking account.

The SECRETARY: It was the most absurd resolution ever passed, considering the position of the mine.

The CHAIRMAN: It was absurd; as there are times when we want a little money to carry us on until we get the ore bills paid.

A SHAREHOLDER suggested it would be advisable to create a reserve fund before anything further was divided amongst the shareholders.

The CHAIRMAN said that perhaps the shareholders would like to make a proposition to that effect. It would be seen there was a small profit of 394. on the four months' working. True, it was not large, but he hoped it was an indication of larger profits in the next four months. He had just received a letter from Mr. West regretting his inability to attend from domestic bereavement, and stating that he was much pleased with the way in which the concern was being carried on, and that great praise was due to the managers considering the bad times they had gone through. They had now a balance at the bankers of 15464. 15s. 1d., and they had also 25000. 16s. 9d. of calls to come in. The money in hand would keep them in funds until the next meeting four months hence. But in order to avoid being in the same position as some time ago, when they had to borrow money of their friend Mr. West, it was necessary to give the committee power to overdraw the banker's account, not to a large amount, but to the extent of 20000. to meet any pressing business which might come upon them. He would propose that the executive be allowed to overdraw their banker's account to an amount not exceeding 20000. for the requirements of the mine.

The SECRETARY: And which will enable us to pay the money lent us by Mr. West.

Capt. BROWN seconded the resolution, which was put, and carried unanimously.

The meeting was then made special, for the purpose of forfeiting certain shares on which calls had not been paid.

The SECRETARY said that there were 208 shares on which 9412. was owing, the bulk of which he considered as bad.

The CHAIRMAN then formally moved that the 208 shares on which the calls had not been paid on Jan. 30 last be forfeited, and that afterwards the shares should be dealt with in the way which the directors might think proper, but subject to restoration if the calls are paid on or before Oct. 21, 1879.

A SHAREHOLDER seconded the resolution, which was put and carried.

A vote of thanks was then passed to the Chairman and executive, and the meeting broke up.

#### WHEEL JANE MINING COMPANY.

A meeting of adventurers was held at Mr. Granville Sharp's offices, Gresham Buildings, Basinghall-street, London, on Tuesday,

Mr. JOHN HOCKING, jun., in the chair.

The notice of the meeting and the minutes of the last having been read, the CHAIRMAN, in submitting the statement of accounts, said the expenditure for four months amounted to 20907. 3s. 1d., against which tin and mundie had been sold, realising 24462. 14s. 10d., showing a profit on the working account of 3564. 11s. 1d., in face of the low price of tin. The debit balance from last meeting was 21084. 11s. 4d.; discounts, 107. 1s. 6d.; bankers' charges to the end of June, 1564. 18s.; dues on tin sold from stock, 464. 16s. 10d.; making a total sum of 23222. 8s. 5d. Against this amount there is the balance from the working account (3564. 11s. 1d.), and the call made in the month of October, 1878, 4564. 13s., less a balance against the adventurers of 15094. 4s. 4d. The overdraft at the bank, 23164. 10s. 10d., was satisfactory as compared with the overdraft in October, 1878, when it was 70000. The Chairman went on further to state that Cornish mining had passed through a severe ordeal during the past three years, since the change in the management in the mine took place, but it had not been without beneficial results, for it had stimulated efforts, and led to economy in working that would in all probability have been postponed or delayed in more prosperous times. No more striking illustration of this is needed than the mine presents. With the continuing drop in the price of tin we found ourselves in this dilemma that we could not meet our costs, a further reduction in the rate of wages at that period was entirely out of the question, and we could clearly see that it was only by doing by machinery what was being effected

a great cost by manual labour that any possible saving could have been effected. The necessity for this was laid before you at the corresponding meeting to this twelve months since, and, receiving the approval of the shareholders, it was immediately taken in hand and commenced to be carried into effect; and, as our manager's report states, a few months more will see it done. Of course, it has been delayed by the necessity of maintaining the returns of the mine. Now what has been the result? Correspondence has appeared in the mining and local papers questioning the results Capt. Southey had mentioned; but the results set forth in the cost-book will set all the controversy in the world on one side. We are now treating and returning more ore than the corresponding period of last year, and with this result—a saving of 5100. on the four months' working. Referring to the suggestion for treating the fumes for sulphuric acid, he explained that there was not sufficient margin of profit to enter on the scheme. The statement of accounts was then passed, and, together with the manager's report, was ordered to be printed and circulated among the shareholders.

The meeting was then made SPECIAL, in accordance with notice, for the purpose of forfeiting shares in arrears of call, but subject to restoration if paid on or before Oct. 24, when a further special meeting will be held to confirm.

A vote of thanks to the Chairman concluded the business of the meeting.

#### JAYALI COMPANY.

The half-yearly meeting of shareholders was held at the offices of the company, St. Swithin's-lane, on Thursday, Vice-Admiral Sir LEOPOLD GEORGE HEATH, K.C.B., in the chair.

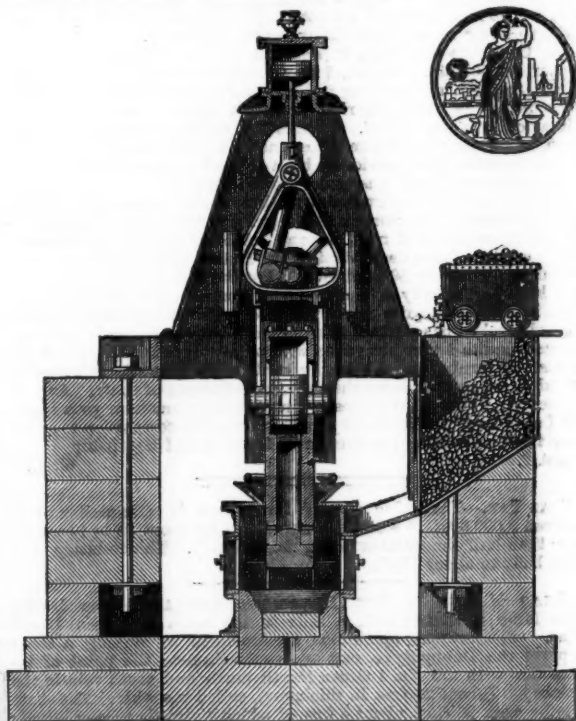
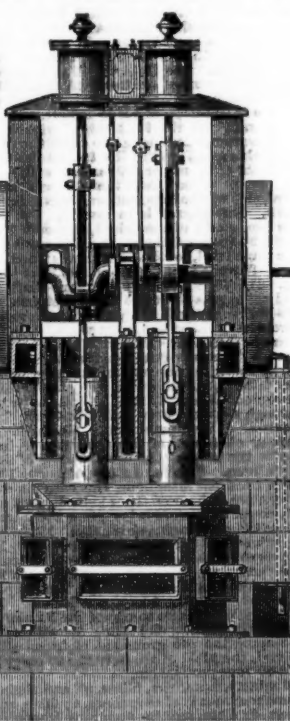
The CHAIRMAN said: Gentlemen, we come before you with a report, showing that results of the working for the first six months of this year do not come up to the results of the working for the corresponding six months of 1878. Mining proverbially has its ups and downs. We have been making progress, although slow, for some considerable number of years, and we cannot expect never to have a check to that progress. The falling off was in the months of April, May, and June. The proceeds for the month of July, being the first month of the current half-year, show a considerable improvement, and the manager's letter, in forwarding that remittance, holds out expectations of a still greater improvement for the month of August. The rainy season is in full swing, and I think there is plenty of time to make up, before the end of the year, a reasonable amount of profit. The work of the mine during the past six months has been of the usual nature, but besides that we have opened upon new ground, and we are prospecting under Socorro and Nispero—parts which in former days yielded extremely rich ore, and made the fortunes of the gentlemen from whom we bought our property. I do not think I have anything more to tell you of what is going on on the other side of the water, except that we continue to have the greatest confidence in Capt. Henneke, who, with the assistance of Mr. Chambers, is doing everything which can be done by an intelligent and energetic man in your interests. The main work of the half-year I consider has been done at home in reducing the interest on the 10 per cent. debentures, and in exchanging what were called the preference shares for 6 per cent. debentures. The result of these two operations has been to do away with the jealousy felt by the 7 per cent. debenture-holders in regard to the 10 per cent. debenture-holders, and the still greater difference which existed between the preference and the ordinary shareholders. We are now all one body, with one interest. The company is necessarily in a very much stronger position than it ever was before by reason of these changes. You will observe that we have for the first time in the history of the company paid off some of our standing debt. Of course we never should have been bold enough to propose a reduction of the 10 per cent. interest if we had not known that we had a considerable sum of money as the result of the profits of last year in our bankers' hands. We knew when a mass of debentures like that became due that there were always gentlemen who had sold their ordinary shares, and thus lost their interest in the company, and others who might really want their money for various reasons, and we knew we should have to pay some off. The thing has been accomplished, and it took 15000. to do it. Now, I think I have nothing more to tell you about the company, but I have had one letter asking what we are going to do in future as to paying off the debentures, and as to dividing the profits (if we have any) amongst the shareholders, and we have considered the subject. Of course, in theory, the right thing to do is to pay off every debenture before you divide a penny amongst the shareholders, because the paying off of debentures bearing 7 per cent. interest is an investment for shareholders at 7 per cent. It stands to reason if money which should have gone to them in dividends, is instead taken to pay off bonds bearing 7 per cent., it is really investing your dividend for the benefit of the general body of shareholders at 7 per cent. I say "in theory" it is the right thing to do, but it is not often in this world that you can act according to theory. Practical reasons invariably come into problem, and you must give some consideration to them. There is a sort of sentiment about a dividend which does not attach to paying off debts, and the board have agreed that the right thing to do under the circumstances is to pay off a minimum of 15000. a year of the debenture debt, and should there be any surplus after that it will be divided as ordinary dividend. Of course if there were any great piece of good luck, we might perhaps pay off a little more, but that will be the policy which we propose to adopt, and which we hope will meet with your approbation. Gentlemen, I now move that the report which has been submitted be received and adopted.

Mr. CHARLES GREEN seconded the resolution, which was put and carried without any discussion.

The CHAIRMAN said there was no further business to transact. General Lord GEORGE PAGET: Gentlemen, I beg to propose a vote of thanks to the Chairman for the very able statement he has made on this occasion, and for the care which he and the directors generally have taken of our interest. We owe them a debt of gratitude.—Mr. ROBINSON seconded the resolution, which was put and carried.

The CHAIRMAN: I beg to thank you, gentlemen, and we will continue to do our best. We are all very large shareholders, and I hope eventually we shall come all right. I hope you will think this proposal about the debentures is a judicious one. It is unfortunate there should be so small a number at these half-yearly meetings. I am not at all sure that they are worth the money they cost to hold—about 84. or 94.—The meeting then broke up.

[For remainder of meetings see this week's Journal.]



## SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL.

N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, ALSO WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER. MINING AND OTHER MACHINERY CONSTANTLY ON SALE, NEW AND SECOND-HAND.

## FIRST PRIZE MEDAL, ROYAL CORNWALL POLYTECHNIC SOCIETY, 1878.

Rate of Drilling, three to four times as fast as hand labour.

Prices complete, £55 to £70.  
**HAND POWER PATENT ROCK DRILL.**  
SPECIALITIES—  
PATENT PNEUMATIC HAND & STEAM POWER STAMPS, CRUSHING ROLLS, PATENT PROSPECTING PLANT, &c.  
T. B. JORDAN, SON, AND MEIHE, ENGINEERS AND CONTRACTORS, 63, QUEEN VICTORIA STREET, LONDON, E.C., AND AT 21 AND 22, LINDENSTRASSE, BERLIN, S.W.

## SOLID DRAWN BRASS AND COPPER BOILER TUBES,

FOR LOCOMOTIVE OR MARINE BOILERS,

EITHER

MUNTZ'S OR GREEN'S PROCESS.

MUNTZ'S METAL COMPANY (LIMITED),

FRENCH WALLS,

NEAR BIRMINGHAM.



## READE BROTHERS,

TOWER VARNISH WORKS,

NECHELLS, BIRMINGHAM.

MANUFACTURERS OF

High-class Varnishes and

Japan.

For COACH & RAILWAY WAGON BUILDERS,

ENGINE BUILDERS, CONTRACTORS, COLLIERY and

GENERAL ENGINEERS,

LAMP MANUFACTURERS,

AGRICULTURAL IMPLEMENT MANUFACTURERS,

DECORATORS, &c.

Lists and Samples on application.

THE CANADA LANDS AND LOAN AGENCY, 32, WELLINGTON STREET EAST, TORONTO, CANADA. Will afford gratuitously to correspondents all information, as to advantages of Settlements for Farmers with means to purchase Freehold Farms, or to gentlemen and Private Families, giving Cost of Property, of Living, Educational Advantages, and Opportunities for Advancing Young Men in Professions or Commercial Pursuits. Also inducements to Skilled Mechanical Labour, Manufacturers, and other Industries. When correspondence leads to settlement or business, a moderate compensation will be payable in this Agency.

MONEY INVESTED AT EIGHT PER CENT. PER ANNUM.

Payable half-yearly, on first mortgage of Good Farms, well situated and improving, worth double the amount at a forced sale. English references when required.

N.B.—Responsible parties in England and Scotland, desiring agencies there, paid by commission, will be supplied with pamphlets and maps, list, and cost of farms, town properties, mineral lands, and manufacturing and other industries now offering, on applying with references as above.



TWO GOLD MEDALS.



SOLE MAKERS—

The LEEDS FORGE CO., Ltd.,  
Leeds, Yorkshire.

# FOX'S PATENT CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER



PARIS, 1878.



PRICE LISTS AND  
PARTICULARS  
ON APPLICATION.

Awarded Gold Medal, Paris Exhibition, 1878.

## HADFIELD'S STEEL FOUNDRY COMPANY.



FIRST PRIZE MEDALS AT LEEDS, MANCHESTER, AND  
WREXHAM EXHIBITIONS, 1875 AND 1878.

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS,

FOR

Engineering & Mining Purposes,

AND ARE THE SOLE MAKERS OF

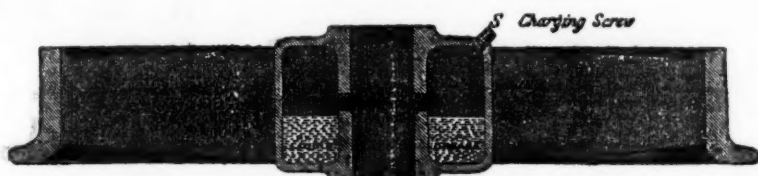
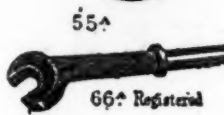


## Hadfield's Self-oiling Steel Wheels

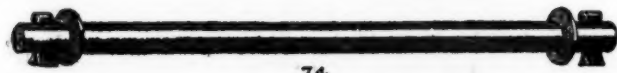
(PATENTED).

These possess advantages held by no other wheels, and are specially adapted for Collieries, Ironstone Mines, Slate Quarries, Lead and Copper Mines, &c., &c., where LOOSE Wheels are used (i. e., those revolving upon their own axles). By the old system of lubricating loose wheels, it is well known this attended with constant labour and excessive waste; and as so little of the grease or oil applied reaches the wearing surfaces, and as re-greasing can only take place at fixed parts of the workings, the bosses of the wheels and bearings of the axles soon become dry, and cut each other: thus causing enormous wear and tear, and necessitating extra labour, haulage power, and expense. These and numerous other defects are entirely remedied by these wheels, as will be readily seen from the following illustrations and advantages claimed.

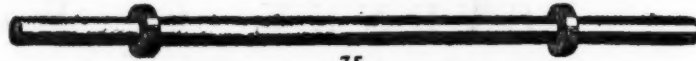
N.B.—Price per Set of Wheels and Axles (ready for use) forwarded on receipt of—1. Diameter of Wheel on tread. 2. Width of tread. 3. Diameter and total length of axle, also whether No. 74 or 75. 4. Rail gauge. 5. Rolling load.



Section



74



75



34



34



72



35

This Advertisement is varied from time to time.

The following are a few of the numerous Advantages claimed by the above Self-oiling Wheels :—

- 1.—Two-thirds (at least) less grease or oil is required than at present used by any known method of lubricating Mining Wagons, whether by hand, machine, or otherwise.
- 2.—These wheels effect a very great saving in haulage power; also wear and tear—being so constructed as never to allow the bearings to become dry. The revolving of the wheel leads out the oil as required, and immediately the wagon stops the lubricator ceases its action.
- 3.—No waste of grease can occur, no matter in what position the wagon may be placed, when discharging its contents (even if up side down); and when the wagons are not in use it is utterly impossible for any grease to escape, as it is all stored below the outlet (as shown above).
- 4.—When once these wheels have been charged with liquid grease (which can be done by any inexperienced person) they do not require any attention or re-greasing whatever for several weeks or even months afterwards, in proportion to the distance travelled.
- 5.—These wheels can be readily fixed to any description of either wood or iron curves now in use, whether the wheels are upon the inside or outside of the frame.
- 6.—They are exceedingly simple in construction, have no detail, and are not liable to get out of order.
- 7.—They possess great strength, durability, and extreme lightness, being made of CRUCIBLE STEEL.

Where FAST Wheels and Axles are adopted instead of Loose ones, as shown above, see our Illustrated Sheets of Drawings Nos. 2 and 3 of

Crucible Steel Wheels and Axles, fitted complete by Hadfield's Patent Method, and Hadfield's Self-oiling Pedestals.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.

## JOHN WILLIAMS AND CO., WISHAW, SCOTLAND,

MANUFACTURERS OF ALL KINDS OF

Cut and Lath Nails; Joiners', Moulders', and Flooring Brads; Copper and Zinc Cut Nails; Colliery Plate Nails; Washers, Boiler Plates, Tube Strips, Sheet Iron for Galvanising and other purposes.

PRICE LIST ON APPLICATION.

PIERCE S. HAMILTON, PRACTICAL GEOLOGIST, SURVEYOR, AND MINING ENGINEER AND AGENT, OFFERS HIS SERVICES in either of these capacities to those interested or desirous of investing in MINING PROPERTY in the PROVINCE OF NOVA SCOTIA or elsewhere in the DOMINION OF CANADA. Having for years filled the administrative position of Chief Commissioner of Mines for Nova Scotia, and having both before and afterwards been himself largely engaged in Mining operations, Mr. HAMILTON has had exceptionally good opportunities of informing himself as to the variety, extent, and character of the mineral deposits of that Province, and as to the most economical and effective methods of working them.

Address—PIERCE S. HAMILTON, HALIFAX, NOVA SCOTIA, DOMINION OF CANADA.

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA. Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.



At the PARIS EXHIBITION the Jurors have Awarded

# THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

## H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

# Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws,  
in Sections, with Patent  
Faced Backs.

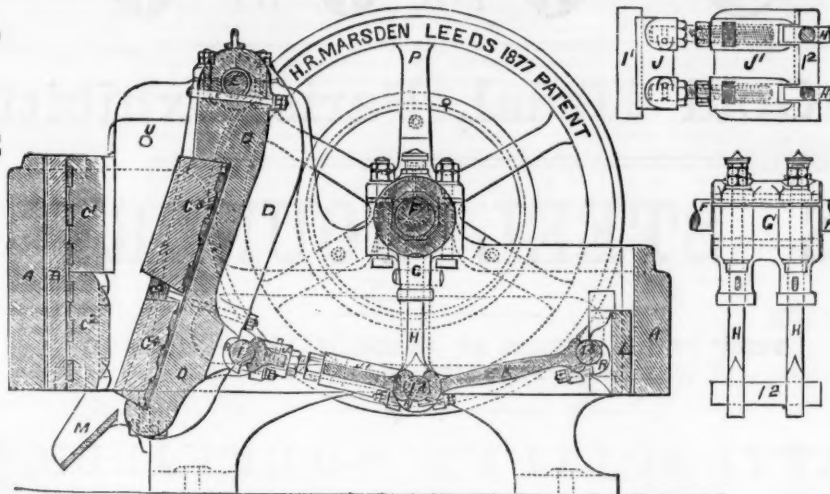
NEW PATENT ADJUSTABLE  
TOGGLES.  
OVER 2500 IN USE.

New Patent Draw-back  
Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70

PRIZE MEDALS.



### READ THIS—

Wharhole Lime Works, Maryport, Whitehaven,  
November 7, 1878.

H. E. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.  
DEAR SIR,—The machine I have in use is one of the large  
size, 24 in. by 12 in. The quantity we are breaking daily with  
this one machine is 250 tons, the jaw being set to break to a  
size of 2½ in. We have, however, frequently broken over  
300 tons per day of ten hours, and on several occasions over  
350 tons during the same period. The stone we break is the  
blue mountain limestone, and is used as a flux in the various  
ironworks in this district. We have now had this machine in  
daily use for over two years without repairs of any kind, and  
have never had occasion to complain of any inconvenience in  
using the machine. I hope the one you are now making for  
me may do its work equally well. The cost—including EN-  
GINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES  
OF EVERY KIND—is just 3d. per ton. Should any of your  
friends feel desirous of seeing one of your machines at work,  
I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,  
WILLIAM MILLER.

### AND THIS—

Wharhole Lime Works, Aspatria, Cumberland,  
July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.  
DEAR SIR,—We are in receipt of your letter of 4th inst. I  
may just state that the stone breaker above named has been  
under my personal superintendence since its erection, and I  
have no hesitation in saying that it is as good now as it was  
five years ago.

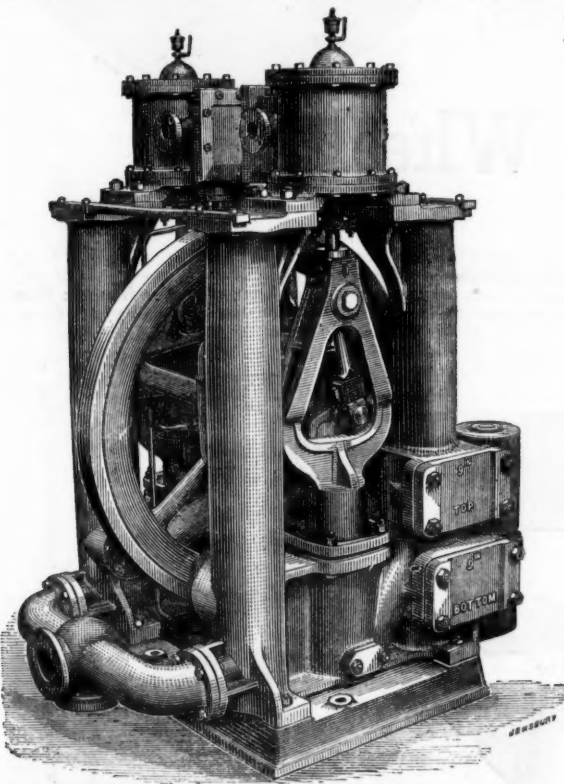
I am, dear Sir, yours faithfully,  
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.



STEAM PUMPS for COLLIERY PURPOSES, specially adapted for Forcing Water any height; also for Sinking; and for Feeding Boilers.

JOHN CAMERON has made over SIX THOUSAND.

WORKS: OLDFIELD ROAD, SALFORD, MANCHESTER.

SILVER MEDALS AWARDED AT CORNWALL POLYTECHNIC  
1872 AND 1876.

THE WELL-KNOWN PATENT SELF-ACTING ORE  
DRESSING MACHINERY, as in operation at most of the  
large Mines in the Kingdom and Abroad, is now supplied solely by  
THE PATENTEE AND MANUFACTURER, Mr. GEORGE GREEN,  
Mining Engineer, AT GREATLY REDUCED PRICES; also all  
descriptions of Mining Machinery, including  
GOLD AND SILVER AMALGAMATING MACHINERY, complete.  
Stamp Mills, Water Wheels, Steam Engines, &c.

ROLLER SHELLS FOR CRUSHING MILLS—a speciality.

SPECIAL DESIGNS FOR EXPORT AND DIFFICULT TRANSIT.

Prices and particulars on application to the Manufactory,  
ABERYSTWITH, SOUTH WALES.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM  
(DAILY) and  
SOUTH WALES GAZETTE  
(WEEKLY), established 1857.

The largest and most widely circulated papers in Monmouthshire and South  
Wales. Chief Offices, NEWPORT, Mon.; and at CARDIFF.

The "Evening Telegram" is published Daily, the First Edition at 3 P.M.; the  
Second Edition at 5 P.M. On Friday, the "Telegram" is combined with the  
"South Wales Weekly Gazette," and Advertisements ordered for not less than  
Six Consecutive Insertions will be inserted at an Uniform Charge in both papers.  
P.O.O. and Cheques payable to HENRY RUSSELL EVANS, 14, Commercial-street,  
Newport, Monmouthshire.

THE NEWCASTLE DAILY CHRONICLE  
(ESTABLISHED 1764).  
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER,  
Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard-street, North  
Shields; 195, High-street, Sunderland.

## THE "CHAMPION" ROCK BORER

MINE AND QUARRY STANDS, STEEL DRILLS, SPECIALLY PREPARED INDIARUBBER HOSE, TESTED  
IRON PIPES, &c.



## Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and  
ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected  
by this machinery, on application.

R. H. HARRIS, late

Mechanical and Consulting Engineers,

ULLATHORNE AND CO., 63, QUEEN VICTORIA STREET, LONDON, E.C.

## Electric-Bell Signals for Collieries, Factories, Warehouses, &c.,

WITH OR WITHOUT GALVANIC BATTERIES.

NEW SYSTEM—CAN BE RUNG AT ANY PART OF THE ROAD. Cheap, safe, and reliable. Efficiency guaranteed. LINES  
OF TELEGRAPH erected and maintained. LIGHTNING CONDUCTORS, &c.

For estimates and particulars apply to—

SYDNEY F. WALKER,

LATE G. E. SMITH,

TELEGRAPH ENGINEER

COMMERCIAL BUILDINGS LONG ROW NOTTINGHAM.

GOLD MEDAL AWARDED, PARIS EXHIBITION 1878.

## THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL. SHEAR, BLISTER, & SPRING STEEL  
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.  
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—90 CANNON STREET, E.C. PARIS DEPOT.—12, RUE DES ARCHIVES.

## J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES,  
FORKS, ANVILS, VICES, SOYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,  
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.  
STOURBRIDGE FIRE BRICKS AND CLAY.